

Lesson 5



© Kip Evans Photography

D Is for Desert

In this lesson, students learn about the desert as one ecosystem in California. They also learn about features and behaviors of different plants and animals that live in the desert. This lesson reinforces the concepts of habitat and how animals depend on the natural system for resources to meet their basic needs (water, food, and shelter).

This lesson also reinforces the concept of the connectors between parts of an ecosystem and between one ecosystem and other ecosystems. Students also learn how humans use resources from the desert to support their daily lives. Sand and rock

garnered through mining are used as examples of desert resources.

Students are actively engaged in analyzing visuals, helping develop a concept map, and working on their ***E Is for Earth*** books. English-Language Arts skills supported through

this lesson include sharing information and ideas, following directions, describing places and things, following words from left to right and from top to bottom, and writing upper case and lower case letters of the alphabet.



© Kip Evans Photography

Background

California is home to Death Valley, one of the most famous deserts in the world. Death Valley National Park is over 3.3 million acres in size and includes the lowest, hottest, driest location in North America, with almost 550 square miles lying below sea level.

The living things in a desert ecosystem must be able to meet their needs in a dry environment. Some plants, like cacti, store water in their roots and stems. Other desert plants have long taproots that penetrate the water table, anchor the soil, and control erosion. The taproot systems of creosote bushes, mesquite, and some other plants can extend 50 feet down to a year-round supply of **groundwa-**

ter. Aquifers are natural reservoirs of water under the ground. If some of this water reaches the surface, a pool forms. Trees and other plants grow around the pool.

Few large mammals live in California's deserts, those that do, like the kit fox and bighorn sheep, have adapted means to meet their water needs and find shelter from the sun. Some smaller mammals have adapted quite well to the dry environment. Antelope jackrabbits eat desert grasses, prickly pears, and other plants. During the hottest part of the day, they rest in shallow holes in the ground or beneath shady plants. Their ears release heat when it is hot. The kangaroo rat is able to metabolize the dry seeds it



eats to produce water. Many desert animals move around and meet their needs at night, when the desert is cooler.

Mining is one of the ways people use the natural resources from the desert. Sand, rock, salt, and various other minerals are some of the things mined from the desert. People use these resources in constructing buildings and roads, making jewelry, and producing a variety of metal products for homes and industry.

Learning Objective

List different habitats (ecosystems) that are found in mountains, rivers, oceans, valleys, deserts, and in their local area.

Name some of the plants and animals that live in their local area.

Identify resources (goods and ecosystem services) that people use in everyday life (e.g., food, air, water, clothing).



© Kip Evans Photography

Key Vocabulary

Groundwater: Water below the surface of the ground that sometimes supplies water to wells and springs.

Mining: The act of extracting minerals from Earth.

Toolbox



Summary of Activities

Students identify some of the challenges plants and animals have living in a desert and discuss how their basic needs are met. They also identify some ways humans benefit from resources found in a desert. They gather information to determine if their school is in a desert.



Instructional Support

See Unit Resources, pages 20-21

Prerequisite Knowledge



- Students should be able to participate in a group discussion by relating comments to the discussion topic and listening to what others say.
- Students must be able to speak clearly enough to be understood by others.
- Students need to understand simple oral directions and be able to gather information from pictures.

Advanced Preparation



Prepare Visual Aids:

Produce materials as indicated in the Visual Aids section.



Materials Needed



E Is for Earth books:

From Lesson 1

Class Supplies:

Crayons or colored pencils, pencils

Visual Aids



Big Book:

The World Around Me

Photo cards:

Desert plants and Animals,
pages 104-107

Duration



Preparation time:

5-10 min.

Instructional time:

50-60 min.



Safety Notes

None

Activity Masters



Desert Assessment Checklist

Page 90

One per class

Procedures

Step 1

Show students the picture of a desert in *The World Around Me* (Lesson 1 Visual Aid). Ask them to describe a desert based on what they see. Encourage them to speak in complete, coherent sentences. Help students develop a description of a desert as a place that is dry, often sandy, and with fewer plants than the mountain, valley, and river ecosystems. While still looking at the picture of the desert, have students identify some of the challenges living things have in meeting their needs in the desert. (*Dryness; extreme heat at some times and extreme cold at other times; limited vegetation for shade and food; limited water.*)

Step 2

Show individual photo cards of a kangaroo rat and an antelope jackrabbit. Have the students identify some of the characteristics of these two animals. Add more information about these animals by sharing the descriptions printed on the backs of the photo cards. Also explain how they adapt to the dry conditions of the desert. (*See information on back of photo cards.*)

Step 3

Show students the photo card of a creosote bush. Ask them what this bush needs to stay alive. (*Food, water, sunlight.*) Share the description printed on the back of the photo card. Also explain how the creosote bush can survive in the dry conditions of the desert.

Step 4

Encourage students to imagine themselves as a creosote bush in the desert. They cannot move to get water, and it does not rain much in the desert. What else could they do to get water? After some discussion, tell them about the special taproot the bush has and how it reaches down to the groundwater below the surface. On the board, make a line drawing of groundwater far below the surface of the ground.

Step 5

Ask the students to think about where the groundwater in a desert comes from. They may talk about melting snow and water moving through rivers, but explain that not all of the water from melting snow and rain enters a river. Some water branches off into smaller streams and creeks. Some of it flows into lakes and ponds. Some of the water sinks into the ground or runs down through cracks in the ground. This water becomes groundwater.



Step 6

Explain that there is a lot of water under the ground in a desert and in other places. Sometimes, it flows like rivers and streams; other times it stays in one place like water in a sponge. This kind of underground storage for water is called an aquifer. The water in an aquifer is stored in layers of earth, gravel, or stone far below the surface. Because the water under a desert is far below the surface, we would have to dig a very long time to reach it. Explain that if we started digging, we would find other useful things before we reach the water. Show students the picture of the desert in *The World Around Me* and point out the truck carrying loads of sand and stone from a quarry. Introduce the word “mining.” Invite students to share what they know about the resources people get from deserts. (*Sand, stone, minerals.*)

Step 7

Use the students’ ideas to develop a concept map depicting some of the parts and connectors in a desert ecosystem. (*See the example in The World Around Me - Part 2.*) Use leading questions to stimulate student contributions:

- What are some words you could use to describe a desert? (*Dry; sometimes sandy or rocky; extreme heat in the day and extreme cold at night; few plants.*)
- Where do some animals get shelter in the desert? (*In holes in the ground; beneath shady plants.*)
- Where do they go for food? (*They eat desert plants and seeds, or other desert animals.*)
- How are parts of the desert ecosystem connected? (*Predator/prey relationships; water; plants as food and shelter for animals; other answers.*)

Step 8

Return students’ individual *E Is for Earth* (Lesson 1 Activity Master) books. Have them turn to the desert page and add (by drawing) some parts of a desert ecosystem (e.g., plants, animals, groundwater, sand, stone). Collect the books when students have completed their work.

Lesson Assessment

Instructions

Description:

Student assessment for this lesson is performance-based and is embedded throughout the procedures. The embedded assessment consists primarily of inquiry questions related to the EEI Learning Objectives. All students should participate in the discussion, and their individual responses should be evaluated for accuracy. Students should be asked to explain some of their ideas to check for any misconceptions. Further student assessment occurs as they complete their drawings in their individual books.

Instructions:

Have students individually discuss the following with the teacher or another adult prepared to assess students' responses and provide feedback:

1. Describe the major characteristics of a desert ecosystem.
2. What challenges do plants and animals face if they are to survive in a desert?
3. What resources from the desert do humans use?
4. Is our school in a desert?

Suggested Scoring

Use the **Desert Assessment Checklist** (Lesson 5 Activity Master) to record students' performance.

Desert Assessment Checklist (Lesson 5 Activity Master)

[illegible]